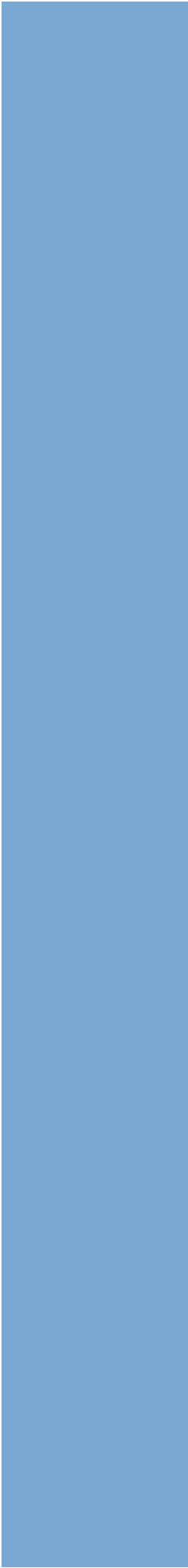


Water Quality Trading Assessment Handbook:

EPA Region 10's Guide to Analyzing Your Watershed





Preface

Water quality trading can be a business-like, cost-effective, local solution to problems caused by pollutant discharges to surface waters. Generally, water quality trading (WQT) involves a party facing relatively high pollutant reduction costs who compensates another party to achieve a less costly, pollutant reduction with the same or greater water quality benefit. The concept of using “market-based” innovations is not entirely new, but there have been relatively few successful trades in the U.S. While trading is not a panacea, it can be a useful tool for water quality enhancement in the right circumstances and some dischargers will welcome the flexibility it can provide.

All markets evolve to help fulfill the demands of consumers. Consumers provide producers an opportunity to earn a profit for altering their behavior and attending to the market’s constantly changing demands for goods and services. Until a consumer decides she “needs” a soda, and is willing to pay someone to produce it, there is no market for sodas.

Total Maximum Daily Loads (TMDLs) are the leading market drivers for WQT markets today because they potentially create the “need” to alter behavior by reducing pollutant loadings discharged to waterways. TMDLs and similar frameworks are sometimes described as “budgets” for the introduction of pollutants into watersheds. Scientific studies estimate the volume of discharge a specific watershed, or segment of the watershed, can assimilate without exceeding the water quality standards enacted to protect the watershed’s designated beneficial use(s). This “pollutant budget” is then allocated across point sources and non-point sources located in the watershed. The allocation of discharge limits forces sources in the watershed to analyze current practices to see if they need to alter their discharging behavior and the associated costs to do so.

The United State Environmental Protection Agency’s (EPA’s) Region 10 office has taken an active role in exploring the mechanics of water quality trading and developing water quality trading markets in hopes of lowering the cost of improving water quality. For example, working with the Idaho Department of Environmental Quality and a wide variety of stakeholders, Region 10 has been helping dischargers to the Lower Boise River create the detailed knowledge, regulatory framework, and techniques for cooperation needed to achieve phosphorus reductions through trades. Region 10 has also supported trading in the Middle Snake River by preparing model NPDES permits that would facilitate trading by the City of Twin Falls and a local business. In Washington and Oregon, Region 10 is supporting assessments to identify opportunities for individual trades or broader trading markets.

Careful analysis is required to identify watersheds with the combination of characteristics to support cost-effective trading. Region 10 encourages stakeholders to be active in identifying potential new trading markets. To that end, this Handbook is designed to provide you, the watershed participant, with an efficient means to assess your watershed’s water quality trading potential and the attractiveness of trading for particular dischargers.

Such an assessment involves several types of analysis. Water quality specialists may need to call on specialists in engineering, finance, and/or regulatory interpretation. This Handbook is intended to help you identify what you need to know, with whom you need to consult, and where you may find the information you need.

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Introduction

In January 2003, the United States Environmental Protection Agency issued a *Water Quality Trading Policy* enabling and supporting the adoption of market-based programs for improving water quality. The policy acknowledges that the progress made towards restoring and maintaining the chemical, physical, and biological integrity of the nation's waters under the 1972 Clean Water Act (CWA) and its National Pollutant Discharge Elimination System (NPDES) permits has been incomplete.¹ When the policy was issued, 40 percent of rivers, 45 percent of streams, and 50 percent of lakes that had been assessed in the United States failed to support their designated uses.² Faced with CWA statutory obligations to achieve their watershed's designated uses, stakeholders have been looking for innovative, supplementary ways to achieve federal, state, tribal, and local water quality goals. The policy specifically enables and endorses the use of "water quality trading" to accelerate compliance.

Water quality trading can be a cost-effective solution to local problems caused by pollutant discharges to surface waters. A party facing relatively high pollutant reduction costs might elect to compensate another party who can achieve an equivalent, though less costly, pollutant reduction with similar water quality benefits. The flexibility offered by water quality trading is one of its strongest selling points.

This Handbook is designed to provide you, the watershed participant, with an efficient means for assessing your watershed's potential to capitalize on this innovative "trading" policy. The viability of trading, as discussed in this Handbook, depends on conditions discussed in EPA's *Water Quality Trading Policy*, including: a market structured around the current CWA regulatory framework; voluntary participation; a suitable pollutant; and public participation.

Today, several trading markets are already helping to reduce the cost of improving water quality. Experience with these markets offers insights into the opportunities and challenges trading may present in your watershed. Experience teaches that success in water quality trading markets will be influenced by several factors, including:

- the pollutant in question;
- the physical characteristics of the watershed;
- the cost of pollution control for individual dischargers;
- the mechanisms used to facilitate trading; and
- the ability and willingness of stakeholders to embrace and participate in trading.

This Handbook will help you assess the environmental, economic, and technical factors that will influence your ability to create and sustain a water quality trading market. During the assessment, you will focus on each of the individual factors that make trading viable. As these factors are examined, you will organize disparate types of information into a comprehensive view of relevant local conditions. You will need to obtain some information from other stakeholders in your watershed. Your efforts will be much simpler if most stakeholders speak a common language. This Handbook will help provide that common language, giving you a methodology for organizing critical information into a logical, easy-to-follow format.

¹ *Water Quality Trading Policy* (EPA, January 2003)

² Ibid.

The first chapter of the Handbook—Pollutant Suitability—addresses whether a "common" or "tradable" commodity exists that is important to the water quality goals for the watershed. Certain pollutants and watershed conditions are more suitable for trading than others. Pilot projects in Region 10 and elsewhere have demonstrated that nutrients can be successfully traded. Less information is available about trading other pollutants. After reading the Pollutant Suitability chapter and examining your own pollutant characteristics and watershed conditions, you will be better able to decide whether to pursue trading.

The second chapter—Financial Attractiveness—addresses how to evaluate the economics of a pollution trading market through consideration of the financial viability of potential individual and aggregate trades. The financial attractiveness of trading depends on whether the incremental costs of trading are less than the incremental costs of control options otherwise available to an individual. Incremental cost (essentially a hybrid of marginal and average cost) is the average cost of control for the increment of reduction required to meet compliance obligations. Incremental cost represents a good approximation of the upper-bound of a source's willingness to pay others within their watershed to alter their discharging behavior. For trading to be financially attractive, the difference in incremental costs between dischargers must, at a minimum, be sufficient to cover trade transaction costs and offset any sense of increased (non-compliance) risk. Assessing the incremental cost spreads associated with specific transactions provides information on whether trading - in practice - will be financially attractive to potential market participants. After reading the Financial Attractiveness chapter, exploring the example provided, and employing the tools/methodologies discussed, you will be able to make a more informed decision about whether to pursue trading.

The Market Infrastructure chapter will help you determine whether the market infrastructure needed to facilitate trading can be built. The analysis will not provide a specific blueprint for creating a market, but will highlight likely challenges and identify ways in which your watershed can benefit from lessons learned in other markets. After reading the Market Infrastructure chapter, exploring the examples provided, and reflecting on the lessons from the first two chapters of the Handbook, you will better understand the watershed's unique market infrastructure needs, possible mechanisms suited for the watershed, and the commitment level likely needed to create a market.

Finally, the Stakeholder Readiness chapter addresses the level of stakeholder interest and support needed to pursue water quality trading. If you decide to pursue trading opportunities, you will need to work with other potential participants and stakeholders in the watershed. They may need to be convinced that the time they spend exploring opportunities will lead to worthwhile, currently unavailable options. Parties with the greatest potential to produce and/or consume reductions are necessary participants. In addition, there must be a reasonable level of support from non-discharging stakeholders, including citizen's groups and regulatory authorities concerned with water quality issues in the watershed. After reading this chapter, you should have a better understanding of how to engage other stakeholders.

The Handbook offers common themes that are important to your assessment and market creation efforts. Among these is the recognition that water quality trading involves a variety of risks and market development costs. Potential trade participants will face the possibility that, despite their hard work, the market they desire will not emerge. Friction around regulatory issues may emerge as the federal, state, and local regulatory framework, as well as necessary stakeholder involvement, add costs or complicate market design. After the market emerges and trading begins, transaction costs will be

associated with information gathering, trade execution, and compliance efforts. The attractiveness of pollution trading markets will be affected by these cost and uncertainty factors. Higher development and transaction costs, market uncertainty, and regulatory impediments can suppress market activity to the point where trading will not occur. Lessons learned from other markets and discussed in this Handbook will help you assess whether costs and friction can be managed in your watershed to support a viable market.